UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

July 2, 2013 LU-9J

Michael Gerdenich
Environmental Health and Safety Team Member
BASF Corporation
1609 Biddle Avenue
Wyandotte, Michigan 48192-3729

Re: Corrective Measures Study Work Plan
BASF North Works, Wyandotte, Michigan
U.S. EPA I.D. #: MID 064 197 742

Dear Mr. Gerdenich:

The U.S Environmental Protection Agency has reviewed BASF's Corrective Measures Study (CMS) Work Plan for the North Works facility submitted on October 31, 2012, and the Supplement to the Work Plan submitted on April 8, 2013. EPA approves the CMS Work Plan, subject to the following conditions that are made a part of the Work Plan.

Source Characterization and Hazard Identification

In both the Executive Summary Section and Section 2.1.2 of the CMS Work Plan, BASF proposes to evaluate the mobility of Non-Aqueous Phase Liquids (NAPL) and then address NAPL through site management and institutional controls. If site-specific assumptions are used to evaluate the mobility of free products, MDEQ's *Operational Memorandum No.1, Technical Support Document - Attachment 8* should be followed. This TSD can be found at:

http://www.michigan.gov/documents/deq/deq-rrd-Op_Memo1_Attach8-CsatTechSupDoc-May2007_285500_7.pdf

Also note MDEQ Rule 299.5706a(2)(a), cited in the TSD, which provides :

> If a generic soil cleanup criterion is greater than Csat, then the person proposing or implementing response activity shall document whether additional response activity is required to control free-phase liquids or to protect against hazards associated with free-phase liquids that are not accounted for in development of the generic criteria.

If it has not already done so, BASF must fully delineate the extent of the Distillate Blow off (DBO) material at the North Works facility, as this is the apparent source of the high pH in groundwater at the Site, as well as source of high pH in on-site subsurface soils, surface water and sediment contamination along the Detroit River shoreline of the facility. EPA expects BASF to eliminate the pathways of DBO-contaminated soil, surface water and groundwater to the river, which may require control, remediation and/or removal of the source material.

In its April 2013 Supplement to the Work Plan, BASF proposed to manage exposure and risk from contaminated soils at the North Works facility's property boundary, rather than focusing on individual solid waste management units (SWMUs) and areas of concern (AOCs). EPA does not agree with this proposal. The CMS must address risk management of contaminated soil at each SWMU or AOC. However, it is acceptable to EPA to manage risk regarding contaminated groundwater at the facility at the property boundary, as BASF proposes in Section 2.1.2 of the Work Plan.

Monitoring and control of venting groundwater must address the two major saturated zones - the fill unit and the lower sand unit. In addition, the Suggested Inventory of Groundwater Monitoring Program Constituents for BASF North Works, attached to EPA's April 26, 2012, letter found in Appendix A of the CMS Work Plan should be amended to include pH. An updated Inventory is attached.

In Section 2.1.2 of the CMS Work Plan, BASF refers to Corrective Action Objectives (CAOs) for groundwater, soil and NAPL contamination at the facility. For purposes of uniform terminology, EPA will consider these objectives "Risk Management Objectives." CAOs will be established once BASF has completed its field studies and, as noted in Section 2.1.2 of the Work Plan, will be included in the draft CMS Report.

Risk Assessment Addendum

EPA approves the Corrective Measures Work Plan Schedule, except that the Tier II Risk Assessment Addendum shall be submitted within 60 days following EPA's approval of the CMS Work Plan. A Conceptual Site Model shall be included as a component of the Tier II Risk Assessment Addendum. BASF shall develop the Conceptual Site Model for both on-site and off-site areas, and shall include in the Model information noted in the first four bulleted items specified under Section 2.1.1, (*Subtask A - Description of Current Conditions*) of the Work Plan

Corrective Measures Study (CMS) Report

EPA approves the Corrective Measures Work Plan Schedule regarding submission of the CMS Reports, with the draft CMS Report due by August 4, 2014. BASF shall evaluate all possible remedial alternatives for the North Works facility in accordance with the four remedy threshold and five balancing criteria outlined in the May 1, 1996, Advanced Notice of Proposed Rulemaking (ANPR; EPA, 1996).

The CMS Report shall include a description of the effects that the groundwater extraction wells at the North Works facility are having on hydraulic gradients and the migration of contaminated groundwater at the facility. This description shall include supporting data with isopachs and isopleths maps.

Reports and Submissions

All reports and submissions required by the CMS Work Plan shall be submitted in both hard copy and electronic copy. Data tables should be in spreadsheet and EDD formats.

Should you have any questions or concerns regarding this CMS Work Plan approval, please contact me at (312) 886-6010. EPA looks forward to BASF's continued cooperation with Corrective Action at the North Works facility.

Sincerely,

Juan Thomas
Project Manager

cc: Rich Conforti, MDEQ
Dave Slayton, MDEQ

Suggested Inventory of Groundwater Monitoring Program Constituents for BASF Northworks as Concluded from BASF's Tier II Risk Analysis

mercury
CN
arsenic
selenium
lead
antimony
nickel,
chromium
zinc
barium
thallium

PAHs
methylphenols
benzene
toluene
chlorobenzene
xylene
1,2-dichloroethane
1,2-dichloropropane
bis(2-ethyhexyl) phthalate
bis(2-chloroethyl) ether
bis(2-chloroisopropyl)ether
pentachlorophenol
4,4'DDT
ethylbenzene
vinyl chloride
dibenzofuran
1,4-dioxane
Phenol
pH